

## XIX. SOME NEW SPECIES OF FISHES FROM THE RIO IGUASSÚ.

BY JOHN D. HASEMAN.<sup>1</sup>

The Iguassú River rises in the Serra do Mar east of Curytiba, Paraná, near the Atlantic Ocean. It flows westward for about a thousand miles over a sand-capped plateau, which is on the average about one thousand meters above sea-level. The river has several rapids and falls, the largest of which, the Salto de Iguassú, is near its junction with the Rio Paraná. This fall is about two hundred feet high and has a volume of water one-third larger than that of Niagara. In a distance of about one thousand miles the river descends nearly three thousand feet. I feel sure that the Salto de Iguassú is older than the present fauna of the lower La Plata.

The fauna of the upper isolated Iguassú is remarkable. There are no turtles and no alligators. There are about twenty-five species of fishes. Most of these have near relatives in neighboring streams, and indeed many of them differ very little from their relatives in the near-by streams, but their constant variation in this region, isolated as they are by the large Iguassú Falls, gives warrant for describing them as new.

The origin of this ichthyic fauna is in doubt. Stream piracy has not taken place, and cannot explain the peculiar life of the upper Iguassú basin, for the fishes of the headwaters of highland streams do not exist in the basin. The Indians and natives told me of cases where they had taken fishes from below the water-falls to above them, and it is possible that some of them have been brought up thither in that way. The long-necked bird, "biguas," nearly always carries cat-fishes, especially the mailed cat-fishes, which it has caught, to stones, and beats them to death before swallowing them. On one occasion I saw one of them fighting with another bird of the same species over a fish, which it had caught below the Avanhandava Falls of the Rio Tieté, and which it dropped into the river above the fall. Such

<sup>1</sup> This is the fifth article published by the Carnegie Museum upon the results of the Expedition to Central South America, 1907-1910.

incidents probably often occur at the smaller falls, where flocks of these long-necked fishing birds fight over their catches. As a rule "biguas" are only able to take catfishes; even if they caught smaller scaled fishes they would probably swallow them at once. How some of the small scaled fishes come to be above the fall, I cannot explain, unless they crossed over from the headwaters of the neighboring Tibagy, where the divide is low and short. There is, however, a fatal objection to this view, found in the fact that *Hoplias malabaricus*, the king of land-travelers, has not crossed over to the Iguassú basin. I have taken young *Hoplias* fully three miles from the nearest creeks, swimming up the narrow Goyaz highland trails, and am at a loss to account for its absence in the upper basin of the Iguassú.

RHAMDIOPSIS, gen. nov.

Related to *Heptapterus* and *Leptoglanis*.

Barbels flattened, anal and adipose fins prolonged, both more or less united to a rounded caudal; dorsal slightly in front of ventrals; pectoral with a slender, weak, and soft-tipped spine; fontanel extending to occipital process, but faintly separated by a bridge back of eye; eye without free margin; teeth in narrow bands in each jaw. No vomerine teeth; head (in places) almost naked and granular; a minute rudimentary spine at the base of the first ray of the dorsal.

1. *Rhamdiopsis moreirai*, sp. nov. (Plate LXXIII.)

No. 2849, *type*, 7.8 cm., from Serrinha Paraná, Rio Iguassú, Dec. 22, 1908.

No. 2849, *cotype*, 5.6 cm., from Serrinha Paraná, Rio Iguassú, Dec. 22, 1908.

D. 7, plus faint rudimentary spine fastened to first ray; A. 21; P. 1, 7; C. 30, including accessory rays; V. 7; depth 5.5 to 6; head .5; pectorals half the length of head and about equal to the depth of the same; width of head about five-sixths of its length; head almost round, very little depressed, profile gently arched from dorsal to snout; caudal portion of body compressed; origin of anal fully as far forward, if not farther, than the adipose; anal and adipose separated from the caudal by a notch in the membrane uniting them. Origin of dorsal slightly in front of ventrals, both of which are small and short; distance between the dorsal and adipose greater than the length of the dorsal. Origin of dorsal to tip of snout about .5 in the length and less than 3 in the total length; none of rays produced; eye small, without free

margins, 7 in length of head, a little over 3 in snout; snout 2.33 in head, slightly greater than interorbital space; barbels all flattened towards the tip, with somewhat membranous margins on one edge; maxillary barbels not extending to end of pectorals; mental barbels all extending a little beyond the base of the pectorals; humeral process pointed and very minute; jaws rather weak and subequal; teeth in bands in each jaw, no vomerine teeth; snout rounded and little or not flattened; lateral line not entire, being composed of several white thick patches along median lateral portion of body, in some cases extending to base of caudal; color almost uniform dark brown with some mottling as in *R. quelen*; lower sides yellowish white; caudal, adipose, and basal halves of dorsal and anal colored uniformly dark brown like body; pectorals and ventrals colorless; head covered with many round white pores almost as large as nares; posterior nares less than distance of orbital diameter from the eye, anterior nares near the edge of the snout; occipital process not united with the dorsal plate; head in part almost naked and granular.

I take great pleasure in dedicating this species to Senhor Carlos Moreira, Secretary of the Geological Survey of Brazil, who devoted much time in assisting me during my stay in Brazil.

Genus HEPTAPTERUS Bleeker.

2. *Heptapterus stewarti*, sp. nov. (Plate LXXIV.)

*Type* and only specimen, No. 2850, from Serrinha Paraná, in a creek about one-half mile from the Rio Iguassú, Dec. 23, 1908. Rare and not known to natives.

D. 9; A. 30; P. I. 8; V. 6; C. 25+4 accessory rays on both sides, in folds of skin which connect the adipose and anal with caudal:

	Mm.
Length of body to base of caudal . . . . .	56
Length of head . . . . .	13
Greatest breadth of head at base of pectorals, which is greatest body breadth . . . . .	10
Greatest depth of head . . . . .	7
Diameter of eye . . . . .	1.5
Length of snout . . . . .	5
Interorbital space . . . . .	4.2
Origin of dorsal from tip of snout . . . . .	21
Origin of ventrals from tip of snout . . . . .	23
Origin of anal from tip of snout . . . . .	31
Origin of adipose from tip of snout . . . . .	31

Base length of adipose . . . . .	24
Base length of anal . . . . .	18

Teeth in bands in each jaw; no vomerine or palatine teeth; base of dorsal equal to its height and greater than the distance between it and the adipose. Ventrals and pectorals small and of equal size, a little more than half the length of head; no rays of any fins prolonged; anal and adipose long and of about same height and extent; pectorals with a short rudimentary spine, less than half the length of its longest rays, without teeth or hooks on either side; no external signs of either a dorsal spine or plate; no occipital process; eye small, without face margin; head covered with skin; barbels terete; fontanel not extending far back of eyes; caudal rounded; body and head slightly depressed to origin of dorsal, posterior portion greatly depressed but not tapering; barbels small, maxillary barbels scarcely reaching past the base of pectoral, mental barbels not reaching the same; snout round; jaws almost equal; lips small; numerous pores on head; nares all equidistant, set in angles of a square, and the distance between them greater than the distance between the eyes and the posterior nares.

Uniform light brown in color without any distinct marking, the basal third of dorsal fin dark.

I have dedicated this species to Mr. Douglas Stewart, who in various ways assisted me during and after the Expedition to Brazil.

After comparing this specimen with others representing the different genera of *Pimelodinæ* without free orbital margins, I consider it a *Heptapterus*, even though it has a rudimentary pectoral spine.

#### Genus RHAMDIA Bleeker.

##### 3. *Rhamdia branneri*, sp. nov. (Plate LXXV.)

No. 2851, *type*, 10.3 cm. } From a creek of the Rio Iguassú, near Ser-  
 No. 2852, *cotype*, 10 cm. } rinha Paraná, Brazil, December 24, 1908.

D. I. 6; A. 10; V. 6; P. I. 8; head 3.75; depth 5.25; eye 2.5 in the snout, 2 in interorbital space and 6 in the head; origin of dorsal 2.75 in length to base of caudal; dorsal inserted in front of ventrals; dorsal spine weak, small, without teeth and less than one-half as long as the longest rays of the same; pectoral spine long and slender, with teeth on both edges and 2.5 times in the length of head; caudal not lobed to its base and lower lobe the larger; none of fins with produced rays; few pores on head; occipital process pointed, not reaching the dorsal plate; fontanel more or less oval in shape, not extending back of eyes;

teeth in bands in each jaw of about uniform depth; abdominal portion of body deeper than the caudal; eyes without very distinctly free margins; adipose about 3.66 in length of body; predorsal region only slightly arched and little depressed; snout rounded; jaws about equal, upper slightly the longer; in some of the alcoholic specimens parts of the head are almost bare, bony or granular; barbels all short and terete; maxillary barbels not reaching past the base of dorsal; postmental barbels not reaching the base of pectoral and the mental barbels not reaching half-way to the base of the pectorals; color about the same as *Rhamdia quelen*, brownish, with darker brown spots and blotches, and the tips of all of the fins dark; no lateral band.

This species is easily distinguished from *Rhamdia quelen* by its shorter rounded barbels, shorter adipose, and shorter body in comparison to length of head.

No. 2853 (collector's number 2211), from Rio Iguassú, Dec. 30, 1908, is called "bagre amarilla" because it is yellow in life. It has eleven anal rays; adipose 3.33 in length of body; eye 3 in snout; mental barbels slightly longer than typical specimen from the creek. I name this species in honor of Dr. J. C. Branner, who kindly assisted me at the beginning of my long journey.

3a. ***Rhamdia branneri voulezi***, var. nov. (Plate LXXVI.)

*Type*, No. 2854 (collector's number 2179), 12.2 cm., from Porto União da Victoria, Rio Iguassú, Dec. 27, 1908. Larger than the typical specimens of *R. branneri* and the dorsal with I. 7 rays. It is almost white in color, with a much longer occipital process, which, however, does not quite reach the dorsal plate; the dorsal fin is higher and the pectoral spine longer than in the other specimens. I consider these differences sufficient to make this a variety, which I call *voulezi*, in remembrance of Mr. Antonio Voulez, a Frenchman of Serrinha Paraná, who in various ways assisted me, even to catching some of the specimens. The postmental barbels of this variety reach past the base of the pectoral and the maxillary barbels reach almost to the origin of the adipose. The only example is 12.2 cm. long.

Two other large specimens, Nos. 2855*a-b*, from Porto União da Victoria, show different color-patterns, one being lead-color and the other having a white ventral, which gradually changes into a uniformly dark dorsal. All agree in having shorter barbels, and rather large eyes, but the four last mentioned specimens have a slightly freer margin to their eyes; all have a thick, rounded two-lobed caudal, which is not

parted to its base, and the lower lobe is somewhat more extensive. Each specimen is in some details distinct and might be given specific rank, but I believe that all have been recently derived from *Rhamdia quelen*, which has arrived by some accident above the Iguassú Falls, where few enemies of fish exist.

Genus PIMELODUS Lacépède.

4. *Pimelodus ortmanni*, sp. nov. (Plate L, fig. 2.)

The *type*, No. 2856, measures 16 cm., and comes from Porto União da Victoria, Rio Iguassú, Dec. 27, 1908.

D. I. 6; A. 10 or 11; P. I. 9; eye 2 to 3.5 in snout, 1.5 to 1.8 in interorbital space and 1.5 in distance between anterior and posterior nares; head 3.5 to 4 in the length; depth 4.33 to 5.5; depth of caudal peduncle 3.5 in head; body rather slender and round; lips rather thick and reflexed; barbels all shorter than in *P. clarias*, maxillary barbels not reaching past anal; postmentals not beyond middle of pectorals and mentals not beyond base of pectorals; humeral process rather slender and pointed; front edge of dorsal and pectoral spines almost smooth and both shorter than the length of the head; no vomerine or pterygoid teeth; upper lobe of caudal longer than the head; head more or less granular and the posterior part almost naked in older specimens; adipose about 5 in length; intermaxillary teeth present; gill-rakers 4 to 6-13 to 17 on first arch.

Back with few to several irregular dusky spots; sides with three to six irregular rows of dark brown blotches in the smaller examples; the number of rows fewer, the spots larger in larger examples. Some have almost no color, while others are mottled because of the mixture of spots.

The *cotype*, No. 2857, has a total length of 20 cm.; head granulated, with little or no skin on posterior part; spots large; eye 2.5 in snout; depth 4.33; head 3.5. This shows that the fish gets thicker and larger with age and has fewer spots. The *cotype* was taken at the same place and date as the *type*.

*Cotype*, No. 2858, 25 cm.; eye 3.5 in snout; depth 4.16; caudal faintly spotted. This variety is locally known as "pintado grosso," and represents about the maximum size of this species, which is the largest fish found in the Iguassú basin above the big falls. Same locality.

*Cotypes*, Nos. 2859a-b. Two small examples from the same locality;

one 11 and the other 9.5 cm. long, with the upper jaw, as in the other examples, slightly protruding; inner edge of caudal lobes dusky and lower lobe with a dusky band in its middle; outer half of dorsal dusky, with small pigment dots, while its basal half is white; ventral side silvery white.

No. 2860a-b, *cotypes*, 9.5 and 14 cm.; rather slender, resembling the type in shape, etc., but more spotted and the spots almost extending to the ventral side.

This species is distinguished from *P. clarias* by fewer gill-rakers on the lower branch of the first gill-arch, having 5-24, 4-14, 6-17, 6-13, 5-15 and 5-15. It has evidently been derived from *P. clarias*, which has in some way found a habitat above the Iguassú Falls, where it is well separated from the present parent form below the falls. *Pimelodus clarias* is not found anywhere in the swampy headwater streams coming from the Brazilian table-land. I think it may have been deposited above the fall by water-birds, especially those known by the natives as "biguas," or by the Indians themselves.

I take great pleasure in dedicating this species to Dr. A. E. Ortmann.

#### Genus PYGIDIUM Meyen.

##### 5. *Pygidium davisii*, sp. nov. (Plate LXXVII.)

*Type*, No. 2862, Serrinha Paraná, Dec. 23, 1908.

D. 7 + a stay; A. 5, and a stay or rudimentary ray; V. 5, and only one-half the length of the anal; head 5.5 in length and heart-shaped;

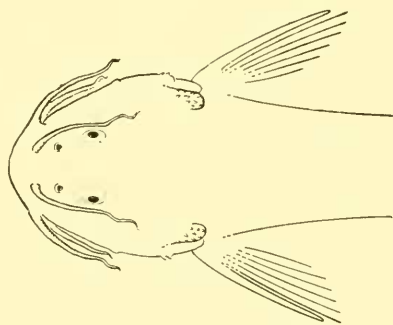


FIG. 1. *Pygidium davisii*. Dorsal view of head.

body slender, and the anterior part round, its greatest depth 8 to 9 in the length to base of its caudal; part back of the dorsal fin much

compressed; the caudal peduncle of the same width throughout its entire length and with several accessory caudal rays imbedded in the fatty marginal band of skin; depth of caudal peduncle three-fourths that of the body and about half the length of the head; mouth rather small, its width being one-third of the length of the head; eyes small, 3 in interorbital, which is two-thirds the length of the snout; nares separated by the distance of an orbital diameter, and the posterior nares more than the distance of an orbital diameter in front of the eyes; teeth in two rows in each jaw. Origin of the dorsal much nearer the tip of caudal than tip of the snout; origin about half-way between that of ventrals and anal; no fin-rays produced; origin of anal under the posterior part of dorsal; caudal almost rounded or slightly truncate; all three pairs of barbels of almost equal length, none extending beyond the base of the pectoral.

In life four were yellow, mottled with a dark subpattern. One very small example was almost white, having only a few faint brownish spots; one resembled in color *P. tania* Steindachner, from the western slopes of Peru. The color-patterns vary. Some specimens have a dark lateral band from the head to the base of the caudal, with one or more series of spots or blotches above it; others are mottled, others yellowish, and some are almost colorless. The fins are plain, rarely with isolated minute dusky spots. Origin of ventrals about half-way from tip of snout to tip of caudal; greatest depth of head not quite half of its length.

No. 2861*a-i*, 2.1 to 4.5 cm. All were taken from a small sandy shady creek, rocky in places, and flowing at the base of Serrinha into the Rio Iguassú near Serrinha Paraná, Dec. 23, 1908, during flood season.

The color-pattern of the type is intermediate between the extremes.

This species is much more slender than *P. proops*, and has a differently shaped head, and there are other minor differences. It is apparently more closely allied to *P. tania* Steindachner of the western slopes of Peru.

I have named this fish in honor of Dr. Davis of Corumba, who in various ways assisted me during the latter part of my journey.

#### Genus GLANIDIUM Lütken.

#### 6. *Glanidium ribeiroi*, sp. nov. (Plate LXXVIII.)

*Type*, No. 2877, 13.7 cm., Porto União da Victoria, Paraná, Brazil, from the Rio Iguassú, where they are locally known as "bocado."



*Cotypes*, Nos. 2683a-e, 9.2-10.5 cm., from the same place.

D. .5 (.4 and a filament in two of the small examples); A. 9 or 10; V. 5; P. .5; C. 18; eye 5.5 to 6.25 in head, 1.5 to 2 in snout, less than 1 between nares, 3.5 to 3.75 in interorbital space; depth of body 4.5 to 5 (4.66 in type); head 3.5 to 3.75 in length; length of dorsal spine 2.5 in that of head; length of pectoral spine 1.75 in the same; length of caudal peduncle from adipose to median base of caudal 1.5 in length of head; least depth of caudal peduncle 2.5 to 3 in length of head; average thickness of caudal peduncle in its depth .7; length of anal about the same as that of the ventrals; origin of anal and adipose almost opposed; in the type the humeral process is four-fifths as long as the pectoral spine; the fins, excepting the dorsal and caudal, are colorless; some have the caudal margined with dark as in typical *G. albescens*; some have about four rows of larger basal caudal spots, which are followed by about the same number of finer spots with the inner surfaces of the lobes edged with white; head and back covered with larger spots, which fade into peppered sides; entire ventral surface white; maxillary barbels reaching to end of, or beyond, the humeral process; mental barbels not reaching more than half of the distance to the bases of pectorals; cleft of mouth not extending past the anterior margin of the eyes.

This species is closely related to *G. albescens*, two examples of which from the Rio Paranáhyba (Entre Rios) in some details resemble the specimens from the Iguassú, but their bodies are not so round, and are more compressed posteriorly, their pectoral and dorsal spines are longer, their caudal peduncle is narrower, their caudals more deeply forked, and their depth less than in the examples from the Iguassú. One specimen of *G. albescens* from Porto Alegre, Rio Grande do Sul, has an even mottled color-pattern composed mostly of small brown spots on the back and sides, as well as the posterior ventral surface, but its total length is 14 cm., against the 13.7 cm. of the type specimen from the Iguassú River, and its caudal peduncle is only half as thick as deep, in contrast with five-sevenths for the various specimens from the Iguassú. The Porto Alegre example also had D. I. 5, but I. 4 is commoner in the case of *G. albescens*. A small specimen 2.5 cm. long, from the Rio Ribeira da Iguapé, is more slender and more compressed posteriorly, and possesses a distinct color-pattern made up of very heavy dark blotches, bands, and spots, especially over the dorsal and upper half of the lateral surfaces; the rest of the body,

excepting the white ventral surface, is peppered with brown. In other details it agrees with *G. albescens*, of which it is probably the young, locally known as "bureva."

I take pleasure in naming this species after Senhor Alipio de Miranda Ribeiro, Secretary of the National Museum in Rio de Janeiro.

Genus IMPARFINIS Eigenmann & Norris.

(*Rhamdioglanus* von Ihering.)

7. *Imparfinis hollandi*, sp. nov. (Plate XLVIII, fig. 2.)

*Type* unique, No. 2864, Porto União da Victoria, Rio Iguassú, December 27, 1909. Known as "guasco."

D. 8; A. 10; V. 6; P. I. 8; length to base of caudal 23 cm.; greatest depth 1.9 cm.; length of head 5.2 cm.; length of snout 1.9 cm.; inter-orbital width .9 cm.; length of maxillary barbels 2.3 cm.; origin of dorsal opposite or above that of ventrals, and 8.8 cm. from tip of the snout; opercular breadth of head 3.3 cm., which is as wide as any part of the body; origin of anal behind that of adipose and 7.8 cm. from base of caudal; anus 10.5 cm. from tip of snout; diameter of eye .8 cm., equal to the distance to the posterior nares; length of pectoral spine 1.4 cm.; pectorals and ventrals rounded; head as well as anterior part of body greatly depressed, while in region of origin of adipose the body is rather round and posteriorly it is compressed; dorsal and anal rays rather long; pectoral spines blunt, untoothed and weak; adipose about 7.5 cm. long, low and continuous with the caudal; caudal peduncle 1.4 cm. deep; orbit without free margins; upper rays and edge of caudal 5.1 cm. long, while lower edge is 3.4 cm.; teeth in bands broadest in middle and narrowing toward the sides; lips rather rough and thick; lower lip greatly reflexed; barbels terete and very short. occipital process not quite reaching dorsal plate; fontanel long and slender, reaching to back of the eyes; darker above and lighter below; fins all more or less dusky without markings, the dorsal and anal darkest; in life there are three fairly distinct bands, one back of head another in dorsal region, and the third at the origin of the adipose.

This species is easily distinguished by the shape of its body, and by the lips, short barbels, peculiar caudal, etc.

It is said to be abundant and easily taken during the dry season (May to October), and to reach eighteen inches in length.

## Genus PLECOSTOMUS Gronovius.

8. *Plecostomus derbyi*, sp. nov. (Plates LXXIX-LXXXI.)

Rare, only one example, No. 2865 (another having been eaten by ants), from Porto União da Victoria, taken in a trap called "cova," December 27, 1909. Length 9.5 cm. to base of caudal.

D. I. 7; A. 5; P. I. 6; V. I. 5; C. 16; depth 5.16; head 4.5 (from tip of snout to humeral process); 28 scutes in lateral line; eye 4 in the snout and 2.5 in interorbital space; belly about one-half covered with small granules; three faint ridges on the head; humeral keels extending on to base of the ventrals; no lateral keels or bony spines to scutes; caudal peduncle almost rounded; similar on all sides; base of dorsal longer than distance intervening between it and the adipose; last dorsal ray half as long as the first; tip of the snout granular; the temporal plates almost carinate; the length of the barbels about equal to diameter of eye; seven scutes between dorsal and adipose fin; caudal emarginate, with lower edge the longer; thirteen scutes between the anal and caudal; outer edge of pectoral with many short spiny processes; width of head at front edge of humeral process greater than the length of same from tip of snout to same place; ventrals almost as long as the pectorals; all fins with rows of spots between the rays, being less distinct on the caudal; ventral surface plain; dorsal surface and head covered with small round spots increasing in size posteriorly. In life there are three distinct and three indistinct dorso-lateral bands, the ones which pass through the rayed dorsal and at base of adipose being most distinct; the faint band over posterior part of head is continued to form a broad bar below each eye.

This species is characterized by the smaller eye, which is one-third less in size than in *P. plecostomus*, by the less elevated occipital, the color, and by the plates being more numerous than in *P. plecostomus*, from which it has apparently been evolved after an accidental arrival above the Iguassú Falls.

It is with great pleasure that I name this species in honor of Dr. O. A. Derby, who has spent thirty-five years in the cause of science in Brazil, and who rendered me more assistance than any other man in South America. A great deal of the success of the Expedition of the Carnegie Museum to South America is indirectly due to Dr. Derby.

## Genus FITZROYA Günther.

9. *Fitzroya eigenmanni*, sp. nov. (Plate LXXXII.)

*Type*, No. 2866, female, 4.3 cm. in length, Serrinha Paraná.

*Cotypes*, No. 2867a-d, female, 3.5 cm.; female, 3.8 cm.; male, 4 cm.; male, 3.3 cm.; collected near Serrinha Paraná, Brazil, three miles from Rio Iguassú, Dec. 23, 1908, in a small wooded swampy creek, sandy and stony in places, with clear cool water.

P. 14; D. 7; A. 7; V. 6; caudal fin rounded; head scaly; mouth almost terminal; snout blunt; top of head and snout flat; scales rather large. Males and females of about equal size; first three anal rays make the tube of the slightly prolonged anal of males. One has the entire anal rolled up in such a way that no rays are visible, and has a three-fingered tip. The alimentary canal is shorter than the length of the body and does not appear to contain any mud.

Jaws strong and thick; upper jaw protractile; teeth prominent but easily detached; diameter of eye less than length of snout, almost 2 in the interorbital and about 4 in the head; head 4 in length of body; depth of body almost equal to the length of head; anal of males tubular in young, tip with three fingers or lobes in older specimens; scales thirty, and those of the posterior part of the median lateral row with peculiar dark central pits or holes. Origin of dorsal nearer the tip of caudal rays than the snout, and slightly in advance of first anal rays (except in two of the younger specimens). Almost cylindrical in shape, and abdomen not much enlarged, while posterior part of body is compressed. All fins colorless; rather broad darkish lateral band more or less complete in adults, but broken into blotches in young; dorsal side dusky, and a dusky band below distinct lateral band; ventral surface yellowish white.

This specimen was caught under stones in rapid water, where it acts like *Characidium*.

I take great pleasure in naming this species in honor of Dr. C. H. Eigenmann.

## Genus CNESTERODON Garman.

10. *Cnesterodon carnegiei*, sp. nov. (Plate LXXXIII.)

*Type*, No. 2868, female, 4 cm., abdomen swollen on account of food. From Serrinha Paraná, December 22, 1908.

*Cotypes*, No. 2869, 22 males, 1.5 cm. to 2.5 cm.; 33 females, 2.2 cm. to 4 cm. Serrinha Paraná, Rio Iguassú, Dec. 22, 1908.

*Cotypes*, No. 2872a-m, 5 females, 2.5 cm. to 3 cm.; 8 males, 2 cm. to 2.4 cm.; Serrinha Paraná, in a creek of Rio Iguassú, Dec. 24, 1908.

No. 2871a-e, 5 females, 2.5 cm. to 3.25 cm.; Porto União da Victoria, Rio Iguassú.

No. 2870a-o, 8 males, 2.1 cm. to 1.8 cm.; 7 females, 2.6 cm. to 2.8 cm. Porto União da Victoria, Rio Iguassú, Dec. 27, 1908.

No. 2873, 16 males, 1.5 to 2 cm.; 11 females, 2 cm. to 3.5 cm.; Arroyo Miguelete, Montevideo, February 17, 1909.

No. 2874, 10 males, 1.9 to 1.4 cm.; 13 females, 1.5 to 2.5 cm.; Uruguayana, Brazil, February 6, 1909.

D. 8; A. 8; P. 9; V. 5 or less; lower jaw somewhat longer, one complete series of closely set chisel or narrow incisor teeth unhooked; scales 29 to 32 in a median lateral series; body rather elongate, slightly compressed in front and depressed posteriorly.

Depth 3.5; head 4 2, diameter of eye 3 in length of head and slightly greater than the length of the snout. The anal of the males is much nearer the tip of snout than the base of caudal. The front edge of first prolonged anal ray (the third anal ray) has a patch of fine teeth located about one-third of the distance from the tip to the base. The mouth opens above. The dorsal is inserted behind origin of anal and about half-way between the base of caudal and posterior edge of opercular flap. The fins are all colorless and the ventrals are very small. The sides are without spots, or with from one to nine blotches or spots (most frequently there are nine). The older females are dark above and have light-colored abdomens. The males are always smaller and have a circular dark anal ring, prolonged as a dark median black line along the keel of caudal peduncle.

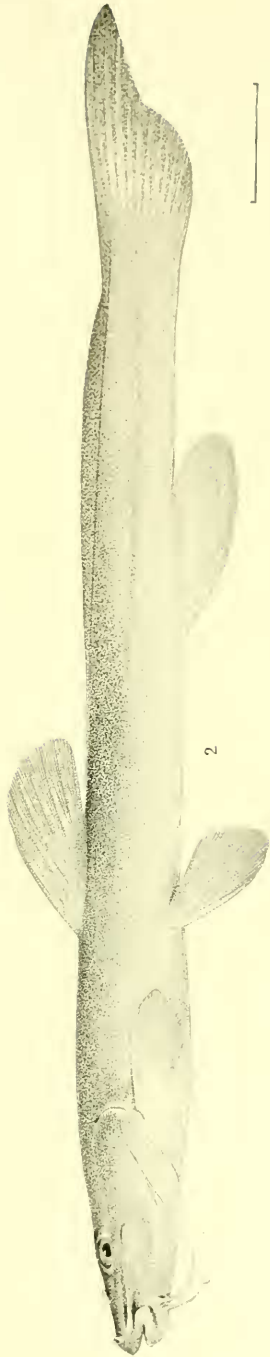
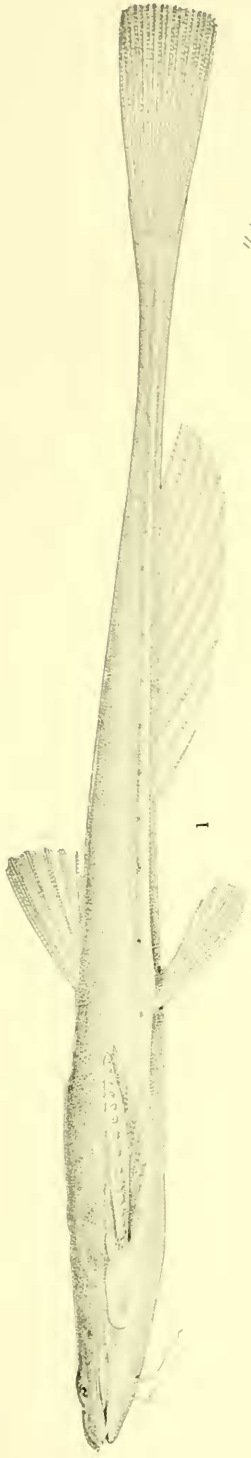
I take great pleasure in dedicating the species to Mr. Andrew Carnegie.

#### Genus CHARACIDIUM Rheinhardt.

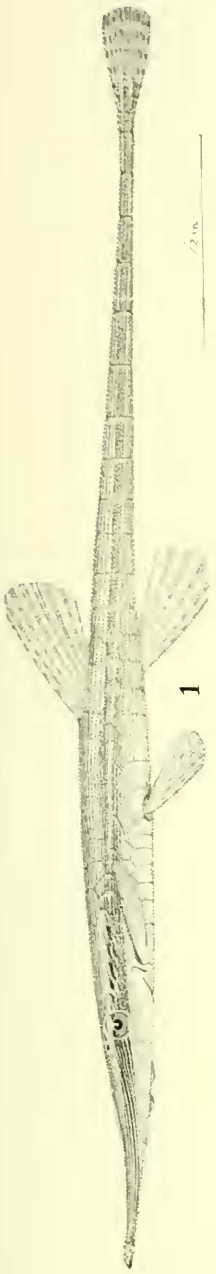
##### 11. *Characidium fasciatum* Rheinhardt.

No. 2875, Serrinha Paraná, and No. 2876a-b, Porto União da Victoria, Rio Iguassú. Above the Iguassú Falls in the Iguassú River.

D. 10 or 11; A. 7; P. 10; V. 9; length 4.4 cm.; depth 1 cm.; head 1.1 cm. long; eye .3 cm., which is a little greater than the length of the snout; pectoral 1.3 cm. long; head 5 in total length; eleven or twelve scales between origin of dorsal and head; lateral line 4.5 to 5-36 to 38-3; lateral line complete or nearly so; pectorals reaching base of



1. *Bunocephalus depressus* Haseman. Type, 65 mm. C. M. Cat. No. 2984.  
2. *Imparfinis hollandi* Haseman. Type, 230 mm. to base caudal. C. M. Cat. No. 2864.

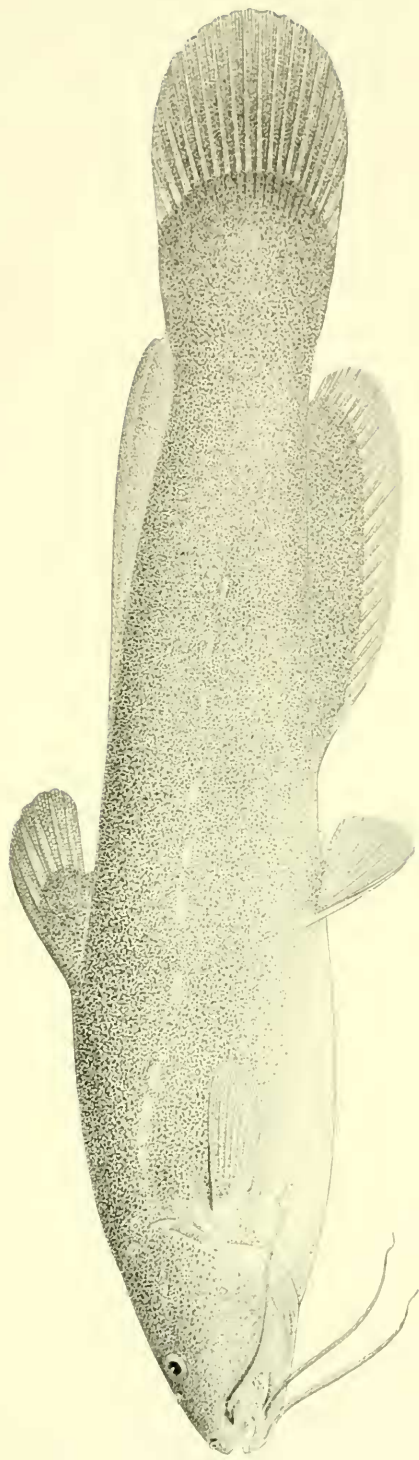


1



2

1. *Acestridium discus* Haseman. Type. 72 mm. C. M. No. 2985.  
 2. *Pimelodus orbmanni* Haseman. Type. 163 mm. C. M. No. 2857.



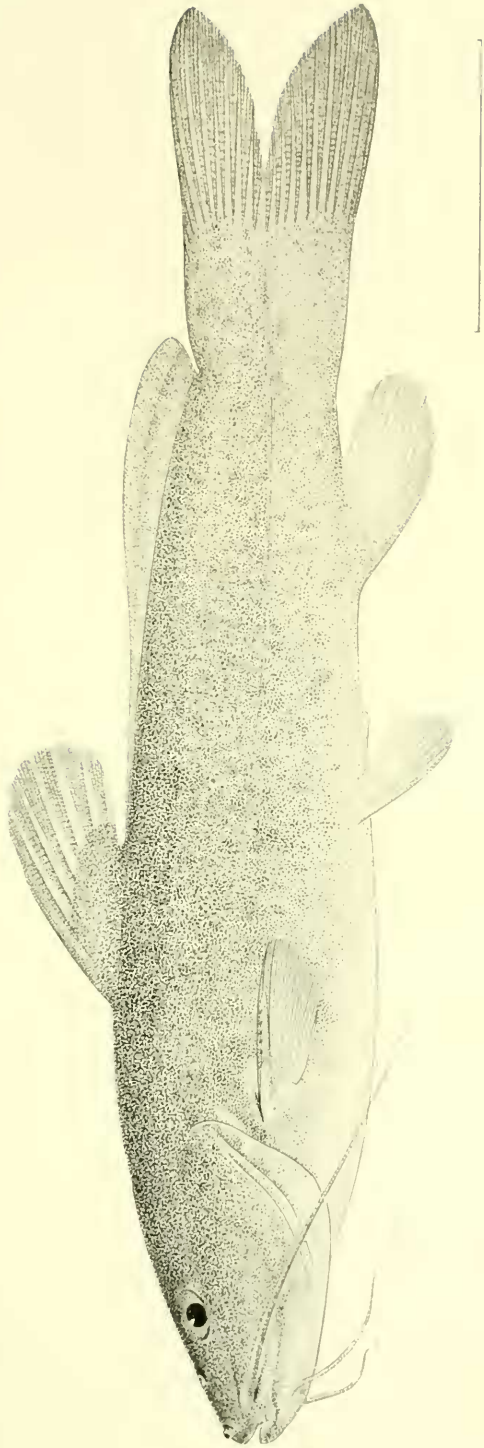
$\frac{1}{2}$  in.

*Rhamdioopsis morcirai* Haseman. 93 mm. C. M. Cat. No. 2849.

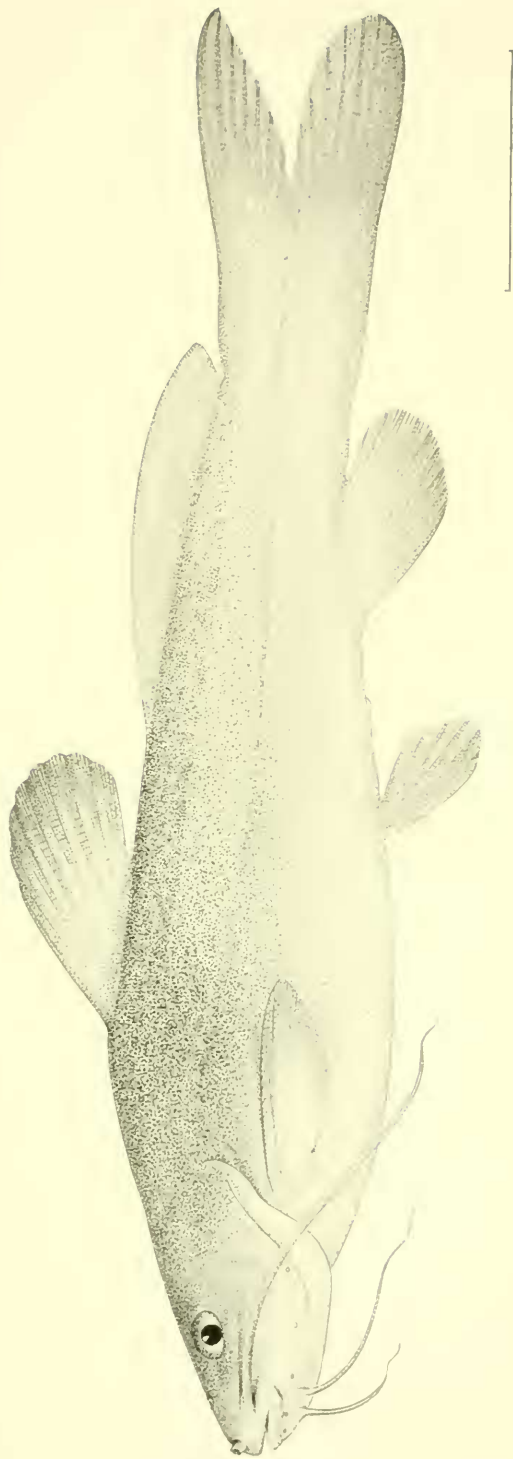




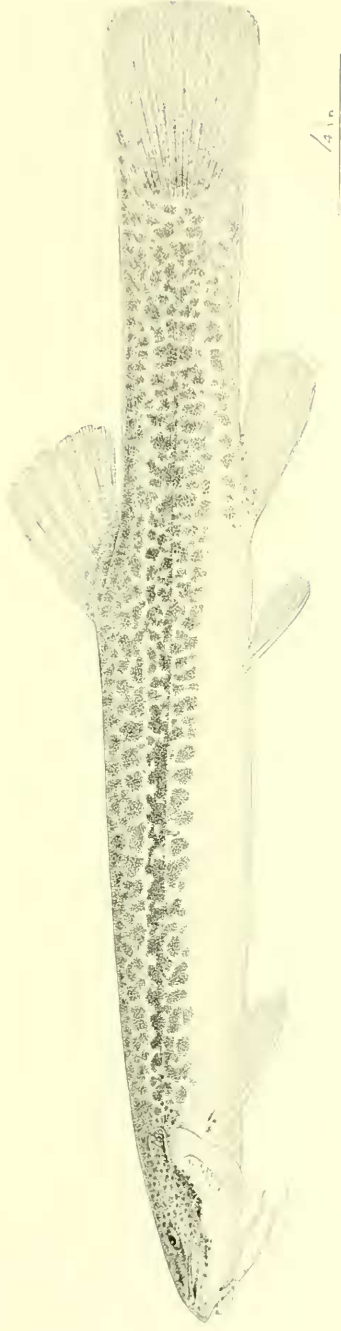
*Heptapterus stewarti* Haseman. Type, 76 mm. C. M. Cat. No. 2850.



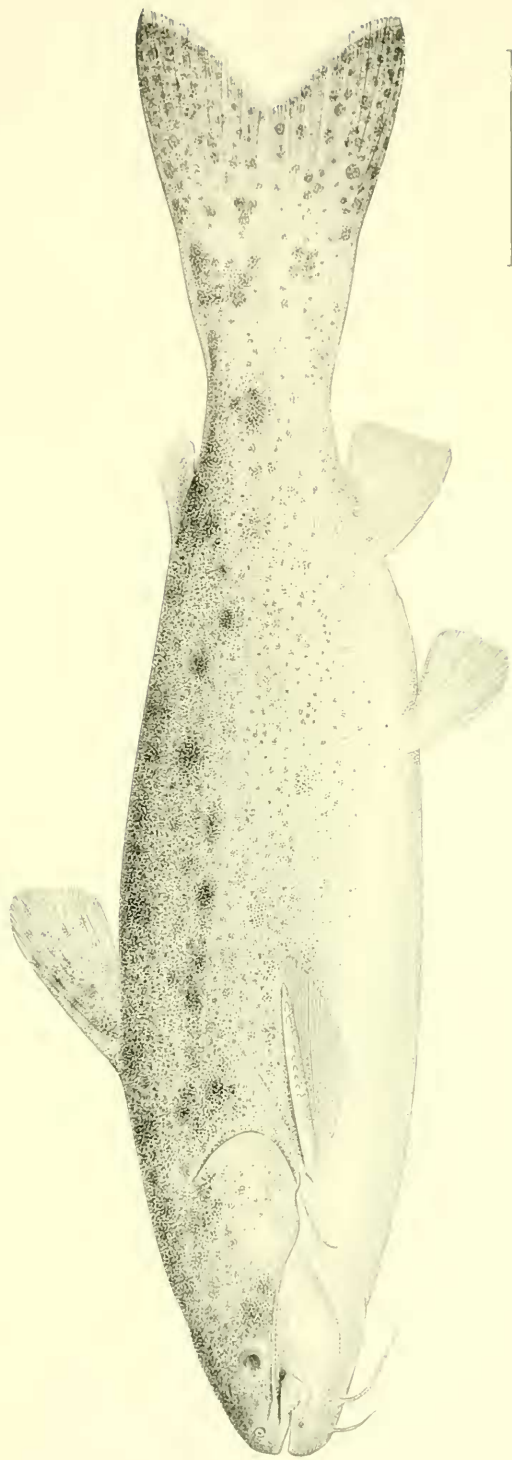
*Rhundia branneri* Haseman. Type, 137 mm. C. M. Cat. No. 2854.



*Rhamdia branneri*, var. *tondesi* Haseman. Type. 150 mm. C. M. Cat. No. 2854



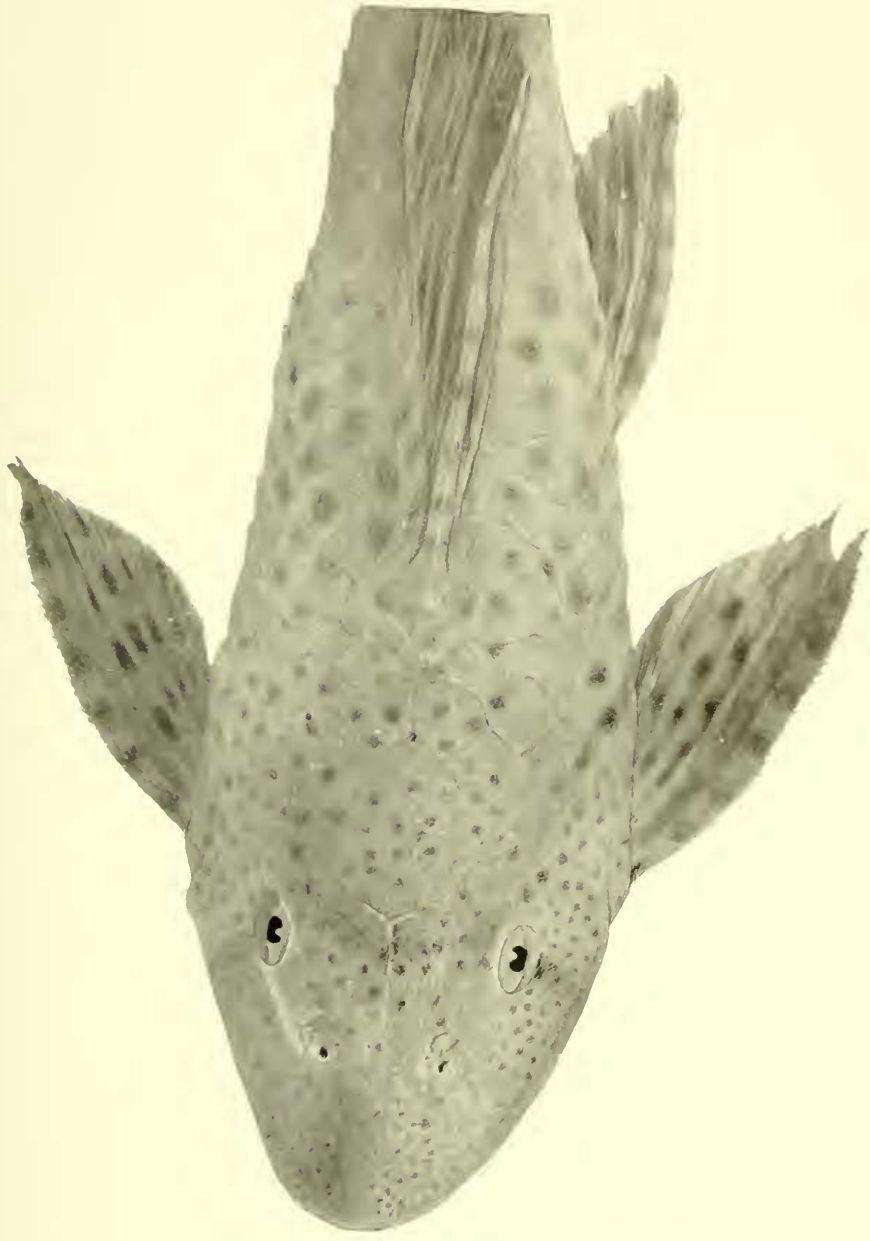
*Pygidium darisi* Haseman. Type. 52 mm. C. M. Cat. No. 2861.



*Giantidium ribetiroi* Hasegan. Type. C. M. Cat. No. 2877.



*Plecostomus derbyi* Haseman. Type. 126 mm. C. M. Cat. No. 2865.



*Piccostomus derbyi* Huseman. Dorsal view of type.

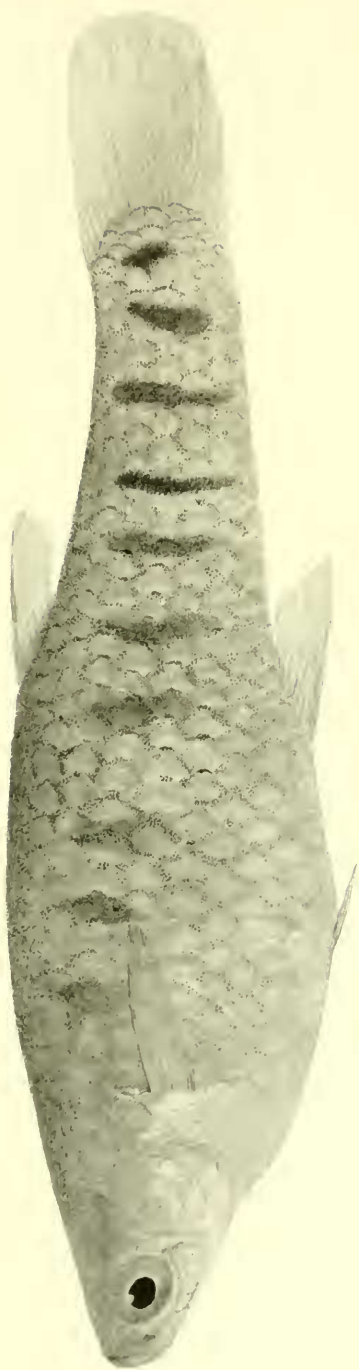


*Plecostomus derbyi* Haseman. Ventral view of type.





*Fiteroya eigenmanni* Haseman. Type. 43 mm. to base caudal. C. M. Cat. No. 2866.



*Cnesterodon carnegiei* Haseman. Type, 49 mm. to base of caudal. C. M. Cat. No. 2868.

ventrals, which in turn reach base of anal; least depth of caudal peduncle .5 cm.; length of caudal peduncle from base of anal to median base of caudal .8 cm.; seven to eight bars, more distinct and slender in younger examples; a median silvery bluish to dark lateral line or narrow band along sides from head to base of caudal; this lateral line very fine in young specimens and never more than the breadth of an orbital in older examples; all specimens with a very minute dark spot at end of lateral line on base of caudal, not more than one-third the size of the eye; the fins colorless as a rule, but some with a dusky tinge.

I cannot distinguish these specimens from those coming from the Rio das Velhas. *C. etheostoma* (Cope) is also a synonym of *C. fasciatum*.

Genus CRENICICHLA Heckel.

12. *Crenicichla iguassuensis* Haseman.

This species has been described elsewhere in these ANNALS (*cf.* Vol. VII, 1911, p. 352).